# The Impact of Computerized Medical Literature Databases on Medical Malpractice Litigation: Time for Another *Helling v. Carey* Wake-Up Call?

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## I. INTRODUCTION

A surgeon, concerned about the postoperative condition of a hand that has been reattached following an accident, utilizes an innovative procedure called pulse oximetry to determine that pulse and oxygen levels in the hand were sufficient to save it without further invasive surgery.[1] A neurologist, faced with what he thinks is a variant of lupus, discovers information which leads to a diagnosis of Sjogren's disease and subsequently a therapy that would otherwise not have been used.[2] An emergency patient has a combination of cardiogenic and anaphylactic shock, making resuscitation difficult. After stabilizing the patient, the physicians obtain information that suggests concentrating on reversing the anaphylaxis rather than the cardiac problems. This decision proves critical to the patient's survival.[3] What is the common link? In each of these cases, the information that enlightened or supplanted the physicians' original diagnosis or course of action was gleaned from a computerized medical literature database.

On-line services, while in existence since the 1970s, were not routinely utilized by "end-users"[4] until the 1980s.[5] It is only recently, however, that their

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[1] *See* Donald A. B. Lindberg et al., *Use of MEDLINE by Physicians for Clinical Problem Solving*, 269 JAMA 3124, 3126 (1993).

[2] *See id.* at 3127.

[3] *See id.*

[4] The term "end-user" refers to the use of databases by the information seekers, as opposed to more knowledgeable or skilled intermediaries. *See* K. Ann McKibbon et al., *How Good Are Clinical MEDLINE Searches? A Comparative Study of Clinical End-User and Librarian Searches*, 23 COMPUTERS & BIOMEDICAL RES. 583, 584 (1990). It is only recently that user-friendly interfaces and commercial vendor packages such as PaperChase and Grateful Med, as well as CD-ROM technology, have created an environment where physicians can access medical information without the help of a medical reference librarian or commercial database search firm. *See* discussion *infra* Part II; *see also* James R. Hilderand, *Computer Technology: Making Contributions to Patient Care*, AM. DRUGGIST, Dec. 1994, at 52; Betsy L. Humphreys & Donald A. B. Lindberg, *Computers in Medicine*, 273 JAMA 1667, 1667 (1995); *Medical Information Service Debuts*, Business Wire, Sept. 15, 1994, *available in* LEXIS, News Library, BWIRE file.

[5] *See generally* Kara Swisher, *Internet's Reach in Society Grows, Survey Finds/ Internet's Popularity Grows with Public, Survey Finds*, WASH. POST, Oct. 31, 1995, at A1.

use has become markedly mainstream.[6] As is evident from the case studies mentioned above, the medical field has not been immune to the databases' advance.[7] Without leaving her office, a physician can quickly access a centralized database containing over seven million references to approximately 3600 biomedical journals,[8] provided the physician has access to a computer, a modem, a telephone line, and an on-line subscription. These databases allow physicians rapid end-user access to current medical research. The access is so quick, in fact, that a physician can retrieve information while contemporaneously tending to a patient during an office visit[9] or, remarkably, during an invasive surgical procedure.[10]

The potential medical advantage of immediate information retrieval is impressive. Recent clinical studies suggest not only that on-line medical literature databases can be critically important in making diagnoses and developing and implementing treatment plans,[11] they can also be a significant factor in modifying patients' health behaviors,[12] creating a defensible conclusion regarding a patient's eligibility for receipt of insurance benefits,[13]

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[6] *See id.*

[7] KAREN T. WALLINGFORD ET AL., U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, SURVEY OF INDIVIDUAL USERS OF MEDLINE ON THE NLM SYSTEM 1 (1988) (finding a dramatic increase in the use of MEDLINE through the National Library of Medicine ("NLM") system); *see also* McKibbon et al., *supra* note 4, at 583.

[8] *See* Hilderand, *supra* note 4, at 53.

[9] *See, e.g.*, R. Brian Haynes et al., *How to Keep Up with the Medical Literature: V. Access by Personal Computer to the Medical Literature*, 105 ANNALS OF INTERNAL MED. 810, 810 (1986). The authors describe a clinical scenario where a patient with insulin-dependent diabetes asks her doctor whether an insulin pump can prevent further retinopathy. The doctor excuses himself, conducts a MEDLINE search, and finds an article in *The New England Journal of Medicine* detailing the findings of recent studies which indicate that the use of the insulin pump to treat retinopathy is still too speculative and unproven. The doctor subsequently explains these findings to his patient, who is both thankful and amazed. *See id.*

[10] *See* Norman Sohn & Richard D. Robbins, *Computer-Assisted Surgery*, 312 NEW ENG. J. MED. 924, 924 (1985) (Letter to the Editor). In this well publicized case, surgeons were engaged in exploratory surgery on a patient with an undiagnosed abdominal mass. Upon performing a biopsy, they discovered a condition (sclerosing mesenteritis) with which they were unfamiliar. Another surgeon quickly performed a MEDLINE search and obtained information that advised against removing the mass. The operation was then terminated, saving the patient from an unnecessary procedure. *See id.*

[11] *See* Lindberg, *supra* note 1, at 3126-27.

[12] *See id.* at 3127 (describing a family practitioner providing MEDLINE information on diet management to a young patient in order to prevent further bouts with a recurrent illness).

[13] *See id.* (noting that information obtained from a MEDLINE search, explaining that patients suffering from membrano-proliferative glomerulonephritis rarely go into remission, supported a physician's decision not to certify to the patient's insurance company that the

and reducing the length of patient hospital stays and health care costs.[14] Furthermore, because modern on-line services are more efficient and user-friendly than earlier attempts,[15] a database search is by far the most effective method physicians can use to access the voluminous quantity of published medical literature.[16] The efficacy of a medical literature database is even more striking in light of the daunting nature of a manual literature search,[17] the difficulties of which cause many physicians either to dispense with the textual resource altogether or at least to subordinate its role as an information tool.[18]

The general standard of care used to judge a physician is based, as is all negligence law, on reasonableness.[19] That is, a physician is expected to render a quality of care "consonant with the level of medical and practical knowledge the physician may reasonably be expected to possess and the medical judgment she may be expected to exercise."[20] When these expectations were first

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patient no longer had the disease).

[14] *See* Michele S. Klein et al., *Effect of Online Literature Searching on Length of Stay and Patient Care Costs*, 69 ACAD. MED. 489, 492 (1994). This is the first quantitative study that finds that a statistically significant relationship exists between a computerized medical literature search on behalf of severely ill patients and a reduction in health care costs and length of stay. *See id.*

[15] *See* Joanne Silberner, *On-Line Medicine*, U.S. NEWS & WORLD REP., Oct. 5, 1992, at 87–88.

[16] *See* R. Brian Haynes et al., *How to Keep Up with the Medical Literature: IV. Using the Literature to Solve Clinical Problems*, 105 ANNALS OF INTERNAL MED. 636, 639 (1986).

[17] *See, e.g.*, David G. Covell et al., *Information Needs in Office Practice: Are They Being Met?*, 103 ANNALS OF INTERNAL MED. 596, 598–99 (1985) (noting that physicians cite lack of time to look up information, a glut of information sources, and poor organization as significant barriers to obtaining answers to questions in the medical literature); Jeremy Wyatt, *Use and Sources of Medical Knowledge*, 338 THE LANCET 1368, 1368 (1991) (citing the number of journals and the rate of journal growth as the most obvious disadvantages of the medical literature, creating storage inconvenience and extraction problems); *see also* discussion *infra* Part II.B.

[18] *See, e.g.*, Covell et al., *supra* note 17, at 599. Although the computer database seems to provide the answer to the literature proliferation problem, Dr. Donald Lindberg, head of the NLM, estimates that only 15% to 20% of physicians have ever performed a literature search themselves or had it done for them. *See* Silberner, *supra* note 15, at 87. This is the primary reason that an evaluation of the legal significance of such neglect is so imperative to the issues of medical malpractice and, more importantly, patient care.

[19] *See* RESTATEMENT (SECOND) OF TORTS § 283 (1965). The general negligence standard of "reasonable care" is described by the *Restatement* as follows: "Conduct of a Reasonable Man: The Standard—Unless the actor is a child, the standard of conduct to which he must conform to avoid being negligent is that of a reasonable man under like circumstances." *Id.*

[20] Hall v. Hilbun, 466 So. 2d 856, 872 (Miss. 1985). This is merely a general statement

developed at common law, magistrates and judges could hardly envision the communication liquidity that now exists in the health care field. However, by incorporating malpractice law under the rubric of negligence, and thus reasonableness, nineteenth century courts and practitioners were leaving room for such an advance, regardless of whether the exact degree was known.[21] Thus, as has been suggested, it seems not only logical, but also legally necessary, to expect physicians to be accountable for the entirety of information that is currently accessible to the medical world via computer information databases; this expectation would engender a level of clinical decisionmaking and medical judgment consistent with modern-day technology.[22]

Fortunately for physicians, and unfortunately for future malpractice plaintiffs, the problems with this conclusion have both legal and practical

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of the expectations the law has of physicians as stated by the Mississippi court in *Hall*. A more complete statement of the standard of care to which physicians are held is found in Part III of this Note. For a comprehensive historical review of the development of the medical malpractice action, see Theodore Silver, *One Hundred Years of Harmful Error: The Historical Jurisprudence of Medical Malpractice*, 1992 WIS. L. REV. 1193. For an introduction to the malpractice standard of care, see generally 61 AM. JUR. 2D *Physicians, Surgeons, Etc.* § 201 (1981); 70 C.J.S. *Physicians and Surgeons* § 70 (1987).

[21] *See* Silver, *supra* note 20, at 1201. As Silver explains, this is accomplished by reference to the notion that reasonable care must be viewed in conjunction with the 19th century notion of "surrounding circumstances," which itself is related to an actor's knowledge. Such a formulation allows the standard to be transferred to various situations and types of conduct without any requirement of changing its textual integrity. *See id.* at 1203–04.

[22] *See, e.g.*, 1 BARRY R. FURROW ET AL., HEALTH LAW § 6-2(a), at 362–63 (1995); Simon Chester, *Electronic Malpractice: Does Reasonable Competence Require Computer Research?*, A.B.A. L. PRAC. MGMT., Nov.–Dec. 1991, at 23; Bradd N. Feldbaum, *Computers and Medical Diagnosis*, N.J. L.J., Feb. 7, 1994, at 10; *see also* Arthur W. Hafner, *Computers and the Legal Standard of Care*, 107 ARCHIVES OF OPHTHALMOLOGY 966, 966 (1989); Brian Kibble-Smith & Arthur W. Hafner, *The Effect of the Information Age on Physicians' Professional Liability*, 36 DEPAUL L. REV. 69, 88–93 (1986). For an interesting analogy concerning the potential for legal malpractice for omitting a LEXIS or a WESTLAW search, see Chester, *supra*; Mark J. Newman, *Shortcuts Help Justify Online Expenses: Computer-Assisted Research Can Both Reduce Costs and Improve Work Product*, N.Y. L.J., Apr. 20, 1992, at S-5 (explaining the many uses of on-line searching in legal practice). One should note, however, that while making the legal malpractice comparison may be academically enlightening, the analogy is practically misguided. The immediate applicability and expeditious formation of newly adjudicated legal precedent provides a far better case for demanding a LEXIS or WESTLAW search as a matter of law. Once decided, legal opinion is essentially the law, albeit limited by jurisdictional grounds. Furthermore, reliance on it by practitioners is judicially *demanded*. Newly tested medical opinion, however, must withstand additional trials and countless methodological attacks from skeptical clinicians before it is reasonably relied upon, much less associated with customary practice.

dimensions. While "reasonableness" is the basic premise upon which medical negligence law is based, in practice, the standard has been transformed into a test dominated almost entirely by absolute deference to customary medical dogma.[23] Furthermore, while the case of *Helling v. Carey*[24] marked a departure from the practice of paying homage to medical custom,[25] such departures are not the norm.[26] Ordinarily, until the medical community adopts a particular procedure, technique, or methodology, a physician is not negligent for failing to discover, consider, or adopt it.[27] While computerized access to medical literature has infinite clinical possibilities, many of which are scientifically proven in their ability to assist with decisionmaking and patient outcomes, the law's deference to medical custom operates to protect those physicians who instead choose to rely on established procedures.[28] Additionally, while much has been accomplished with regard to establishing a user-friendly, comprehensive, clinically effective literature-searching tool, there is much yet to be done before any legal standardization can be considered.[29]

The purpose of this Note is to present the current state of both medical databases and medical malpractice law in the United States and to evaluate the

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[23] *See* discussion *infra* Part III; *see also* 1 FURROW ET AL., *supra* note 22, § 6-2, at 361; W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS § 32, at 187 (5th ed. 1984); Clarence Morris, *Custom and Negligence*, 42 COLUM. L. REV. 1147, 1163 (1942); Richard N. Pearson, *The Role of Custom in Medical Malpractice Cases*, 51 IND. L.J. 528, 528 (1976).

[24] 519 P.2d 981 (Wash. 1974). For a discussion of *Helling v. Carey*, see *infra* Part III.A.3.

[25] *See* Joseph H. King, Jr., *In Search of a Standard of Care for the Medical Profession: The "Accepted Practice" Formula*, 28 VAND. L. REV. 1213, 1247 (1975) (calling the *Helling* decision an "abrupt" change in the traditional practice of judicial bowing to medical custom).

[26] *See, e.g.*, cases cited *infra* note 109. *See also* 1 FURROW ET AL., *supra* note 22, § 6-2, at 361.

[27] This generalization assumes both that one is in a jurisdiction that follows custom and that the clinical innovation is not yet assimilated by the medical community to the extent one would label it customary. This conclusion is relatively sound with regard to recently published procedures or techniques. *See* Ann Lennarson Greer, *State of the Art Versus the State of Science*, 4 INT'L J. OF TECH. ASSESSMENT IN HEALTH CARE 5, 23 (1988) (discussing the delay in technology diffusion from external sources into local medical behavior); *see also* discussion *infra* Part III.

[28] *See* 1 FURROW ET AL., *supra* note 22, § 6-2, at 361. "Defendants trying to prove a standard of care normally present expert testimony describing the actual pattern of medical practice, without any reference to the *effectiveness* of that practice." *Id.* (emphasis added). And, as this practice is generally given conclusive weight, the jury is unable to reject this custom as negligent. *See id.*; *see also* Holt v. Godsil, 447 So. 2d 191 (Ala. 1984); Senesac v. Associates in Obstetrics and Gynecology, 449 A.2d 900 (Vt. 1982).

[29] *See* discussion *infra* Part III.

legal and practical potential for merging the two. Part II of this Note provides an overview of the computer information sources currently available to physicians, as well as various clinical studies analyzing their use and effectiveness. Part III then discusses the legal potential for incorporating these modern computer information systems into the standard of care to which physicians are held. Particular attention is given to the role of custom in medical malpractice litigation, the alternatives to the traditional standard that is currently used by the courts, and the legal and practical problems associated with any assimilation of database technology, regardless of the legal approach taken.

## II. THE CURRENT TECHNOLOGICAL STATE OF MEDICAL INFORMATION DATABASES

### A. *MEDLINE: Who, What, Where, When, Why, and How?*

MEDLINE is the premier bibliographic database[30] housed at the National Library of Medicine ("NLM"),[31] containing references to over 3700 biomedical journals covering literature from 1966 to the present.[32] MEDLINE[33] contains all citations published in the hardbound medical literature

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[30] While this Note concentrates primarily on MEDLINE, the NLM offers a number of other databases to which a physician could gain access, often at no additional fee. These include AIDSLINE—devoted to HIV-related information; BIOETHICSLINE—covering ethical concerns and public policy issues; CHEMLINE and Chem ID—containing chemical dictionaries; TOXLINE and TOXLIT—containing toxicological information; and DIRLINE—a directory of 14,000 "information resources." NATIONAL LIBRARY OF MEDICINE, U.S. DEP'T OF HEALTH AND HUMAN SERVICES, GOOD MEDICINE FOR YOUR INFORMATION NEEDS (1995) [hereinafter NLM, GOOD MEDICINE]. The total NLM database system consists of over 40 on-line databases containing about 18 million references. NATIONAL LIBRARY OF MEDICINE, U.S. DEP'T OF HEALTH AND HUMAN SERVICES, FACT SHEET: NLM ONLINE DATABASES AND DATABANKS (1994) [hereinafter NLM, FACT SHEET]. For the purposes of this Note, the reader should assume that any reference to MEDLINE generically refers to the entire NLM network.

[31] In 1956, the Armed Forces Medical Library was designated as the National Library of Medicine. *See* National Library of Medicine Act, Pub. L. No. 84-941, 1956 U.S.C.C.A.N. (70 Stat. 960) 1134. The purpose of the NLM was to "aid in the dissemination and exchange" of scientific and medical information. *Id.* § 371. Authorization for the NLM is currently codified at 42 U.S.C. § 286 (1994).

[32] *See* NLM, FACT SHEET, *supra* note 30; *see also* Hilderand, *supra* note 4, at 52.

[33] The first of NLM's computer databases was MEDLARS, developed by NLM to automate the *Index Medicus* topical index system. *See* Kibble-Smith & Hafner, *supra* note 22, at 81. MEDLARS was converted into MEDLINE (MEDLARS On-Line) so that the resource

citation resource called *Index Medicus* and corresponds in part to the *International Nursing Index* and the *Index to Dental Literature*.[34] The database contains over 7.8 million citations from medical literature, with 31,000 new citations added each month.[35] By using a structured system of Medical Subject Headings ("MeSH"), consisting of approximately 18,000 annually updated terms,[36] each of these citations is comprehensively indexed and cross-referenced with MeSHs used to identify information contained in the source article to which the citation refers. A physician inputs various search terms resulting in retrieval of all bibliographic citations that contain the terms.[37] A typical citation contains information describing the author, title, source, publication date of the reference, and an abstract providing a brief description of the article.[38] As only a citation and an abstract are retrieved from a MEDLINE search,[39] one must visit the local medical library to obtain the source in full-text form or download the article from a commercial service.

Various commercial services, referred to as vendors, provide end-user access to the MEDLINE database by providing a software package and terminal that accesses NLM holdings.[40] A start-up package, including both software and a user password, costs around $30, with search costs ranging

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could be made available to the public by way of commercial vendors, *see id.*, such as BRS Information, Dialog Information, Compuserve Inc., and National Technical Information Services. *See* Hilderand, *supra* note 4, at 54.

[34] NLM, FACT SHEET, *supra* note 30.

[35] *See id.*

[36] *See id.*

[37] *See* Hilderand, *supra* note 4, at 54.

[38] *See id.*

[39] While only citations and abstracts are available through a standard MEDLINE search, Mead Data systems (the vendor responsible for LEXIS/NEXIS) offers full-text retrieval capability with user-friendly access. This system, called MEDIS, allows physicians or medical students access to the full text of stored documents, eliminating one of the major drawbacks of MEDLINE. While the number of journals accessible is fewer than the number of journals available through MEDLINE, users can access MEDLINE through MEDIS, still subject, however, to MEDLINE's limitations. *See* Kibble-Smith & Hafner, *supra* note 22, at 84.

[40] *See* Hilderand, *supra* note 4, at 54. The Grateful Med software package, available directly from the NLM, provides physicians with a more user-friendly environment for searching MEDLINE, assisting the user's search by automatically logging on to the NLM computer, prompting the user to enter search information, and helping the user select appropriate MeSH search terms. *See* NLM, GOOD MEDICINE, *supra* note 30. PaperChase is another popular software package which provides end-user access to the NLM system. *See* Gary L. Horowitz, *PaperChase: A Computer Program to Search the Medical Literature*, 305 NEW ENG. J. MED., Oct. 15, 1981, at 924.

from $15 to $32 per hour of use.[41] Most vendors also charge $8 to $10 for each full-text journal article that the user chooses to download onto a printer or diskette.[42]

End-users can also obtain access to MEDLINE via the CD-ROM format.[43] The discs, which cost about $2000 per year, can hold about 330,000 typewritten pages of text each[44] and make it possible to provide MEDLINE directly to clinicians without telecommunications difficulties and on-line user charges. MEDLINE use via CD-ROM is characterized as more enjoyable and user-friendly than the traditional on-line methods,[45] as well as being more cost-effective, particularly for the frequent database user.[46]

## B. *The Relevance of Ready Access to Information on Patient Care: Clinical Uses*

In 1985, Covell, Uman, and Manning[47] published the results of a study analyzing the information needs of forty-seven physicians during a half-day of typical office practice. Physicians raised 269 questions during a series of 409 patient visits. Although responses to a pre-trial questionnaire showed that information was needed an average of once per week, the study indicated that these physicians actually formulated about two questions for every three patients seen. Seventy percent of these questions were related to either treatment of specific conditions, diagnosis of symptoms, physical findings, or drug information.[48] Yet, while a substantial number of questions were routinely generated by physicians in the survey, the answers were found only 30% of the time![49]

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[41] *See* Hilderand, *supra* note 4, at 54.

[42] *See* Silberner, *supra* note 15, at 89.

[43] *See* Hilderand, *supra* note 4, at 54.

[44] *See id.*

[45] *See* Prudence W. Dalrymple, *CD-ROM MEDLINE Use and Users: Information Transfer in the Clinical Setting*, 78 BULL. MED. LIBR. ASSOC. 224, 229 (1990).

[46] *See* Hilderand, *supra* note 4, at 54. As the perceived costs of time, effort, and money can act as a significant barrier to a physician's information seeking habits, "the easy, unlimited access to current information that CD-ROM technology makes possible can be a strong argument for placing such a system in the [medical] clinic or office." Dalrymple, *supra* note 45, at 231.

[47] *See* Covell et al., *supra* note 17, at 596.

[48] *See id.*

[49] *See id.* at 598. While information barriers were responsible for this infrequency at least in part, the researchers suggest that the number of questions generated during the half-day office practice may have been stimulated somewhat by the interviewing process, which was conducted subsequent to each patient visit. Furthermore, information needs were often

Data from other studies confirms these conclusions.[50] One researcher evaluated physicians' awareness of current medical practice and found that the strongest predictor of the drugs that doctors prescribed was an individual physician's year of qualification.[51] In essence, these physicians had ceased to assimilate vital information after a fixed period of time. In yet another study, conducted by Williamson in the mid-1980s, over a third of the specialists surveyed were entirely unaware of the medical value of glycosylated hemoglobin, a substance useful in the assessment of diabetics, and about half were without knowledge of the dangers of digoxin in elderly patients with uncomplicated heart failure.[52]

What makes the Williamson study astonishing is that in each case, reliable evidence had been published and widely disseminated in the medical literature.[53] The clinical usefulness of up-to-date medical literature with regard to patient care, diagnosis, and treatment has been lauded by numerous health care professionals.[54] With respect to literature's effect on a physician's diagnostic thinking, surveyed residents indicated that they learned something new from journal articles 86% of the time.[55] With the benefits of literature

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stated in terms that did not require a search for an immediate answer, or even an answer at all. *See id.* at 599.

[50] *See, e.g.*, Jerome E. Osheroff et al., *Physicians' Information Needs: Analysis of Questions Posed During Clinical Teaching*, 114 ANNALS OF INTERNAL MED. 576 (1991) (concluding that it is difficult to satisfy information needs for clinicians).

[51] *See* C. Edward Evans et al., *Does a Mailed Continuing Education Package Improve Physician Performance? Results of a Randomized Trial*, 255 JAMA 501 (1986).

[52] *See* John W. Williamson et al., *Health Science Information Management and the Continuing Education of Physicians*, 110 ANNALS OF INTERNAL MED. 151 (1989).

[53] *See* Williamson et al., *supra* note 52, at 151–60. A 1991 trial by Osheroff confirmed these results. *See* Osheroff, *supra* note 50. After finding that, on average, five clinical questions were raised by physicians for each patient seen (supporting the 1985 study by Covell et al., *supra* note 17), researchers further explained that answers to 23% of these questions could be found by reference to a textbook, journal, or MEDLINE. *See* Osheroff, *supra* note 50, at 576; *see also* R. Brian Haynes et al., *Online Access to MEDLINE in Clinical Settings: A Study of Use and Usefulness*, 112 ANNALS OF INTERNAL MED. 78, 81 (1990) (noting that 47% of clinical decisions made by physicians were affected by recent literature gleaned from MEDLINE). *But see* Wyatt, *supra* note 17, at 1369 (noting the surprising result of "how often there is no answer in literature for the patient-care questions that emerge").

[54] *See, e.g.*, Haynes et al., *supra* note 16, at 636; Georgia Scura & Frank Davidoff, *Case-Related Use of the Medical Literature: Clinical Librarian Services for Improving Patient Care*, 245 JAMA 50, 51 (1981) (noting that medical literature affected patient treatment in 20% of cases studied, compared with the fact that only 5% of laboratory tests ordered actually affected treatment).

[55] *See* Scura & Davidoff, *supra* note 54, at 51.

clinically useful, statistically substantiated, and readily available, why is it that physicians are failing to take advantage of this valuable resource?

The primary reasons[56] for this reluctance are (1) the rapidly increasing volume of literature available and (2) the reliance by physicians on informal information sources. Professional literature is a source of continuing medical education for most health care providers,[57] due in primary part to its case-related nature and timelines. However, without an expeditious and efficient system of information retrieval, physicians tend to rely on other more informal and less scientific sources like other physicians and health care professionals.[58] The increase in the number of journal titles since 1870 is staggering, with the number doubling every nineteen years.[59] This exponential increase makes journal researching a daunting task for many physicians, not only with regard to conducting medical library searches, but also in referencing their personal office libraries.[60] Proper searches take an appreciable amount of time, and without efficient organization and referencing, any manual searching of all relevant sources is disruptive to a physicians' patient-care responsibilities.[61]

The volume of medical literature and the difficulty in gaining access to it serves, at least in part, to further entrench the medical community into its traditional form of information-seeking behavior—intra-professional advice seeking.[62] The colleague as an information source solves a number of retrieval

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[56] Other factors are cited, including the lack of clinically practical articles, *see* Joanne G. Marshall, *Issues in Clinical Information Delivery*, LIBR. TRENDS, June 22, 1993, at 83, and lack of trust due to perceptions of inaccuracy or poor statistical design, *see* Wyatt, *supra* note 17, at 1370. *See also* discussion *infra* Part III.

[57] *See, e.g.*, E. Ray Stinson & Dorothy A. Mueller, *Survey of Health Professionals' Information Habits and Needs*, 243 JAMA 140, 140 (1980) (finding that medical literature was the most common source of information for health professionals). *But see* Covell et al., *supra* note 17, at 597 (finding that physicians' perceptions of frequency of searching medical information to solve clinical problems was higher than their *actual* use); Armin D. Weinberg et al., *Informal Advice- and Information-Seeking Between Physicians*, 56 J. MED. EDUC. 174 (1981) (discussing the informal information-seeking behavior of physicians seeking advice from colleagues as precipitated, at least in part, by the avalanche of and difficulty in gaining access to new medical information).

[58] *See* Covell et al., *supra* note 17, at 597; Weinberg et al., *supra* note 57, at 174; *see also* Williamson et al., *supra* note 52, at 152. For a comprehensive overview of the information seeking habits of physicians and an analysis of the major published studies dealing with this issue, see generally Marshall, *supra* note 56.

[59] *See* Wyatt, *supra* note 17, at 1370.

[60] *See* Covell et al., *supra* note 17, at 597.

[61] *See* Scura & Davidoff, *supra* note 54, at 50.

[62] *See* Weinberg et al., *supra* note 57, at 174–75; *see also* Covell et al., *supra* note 17, at 597. Particularly susceptible to this phenomenon are office-based physicians, as opposed to those in teaching or research settings. *See* Marshall, *supra* note 56, at 83.

problems, including proximity of information and ease of access.[63] However, this practice tends to encourage the phenomenon of medical knowledge stagnation by impeding the diffusion of knowledge from external sources (like medical or other scientific journals) into the general medical community.[64] As one researcher explains, "[L]ocal life reinforces local 'knowledge.' Associations, interests, and habits require and elicit continuity of behavior."[65] Physicians themselves question the efficacy of looking exclusively to medical "opinion leaders,"[66] as there is no guarantee that a colleague's recall is adequate.[67] Additionally, this behavior fails to provide the same learning experience as one would gain by looking directly to a textual source.[68]

The medical literature database may afford a solution to ineffective information retrieval behavior. The use of automated information retrieval seems like the logical solution to bridge the gap between physicians and cutting-edge research, as well as to reduce the cycle of resorting to colleagues who may themselves be unaware of recent literature. Recent studies support the effectiveness of MEDLINE with respect to literature retrieval ability, ease of use, cost effectiveness, and patient care.[69] MEDLINE provides ready access to over seven million sources of medical knowledge. Yet, with all of these statistical and practical testimonials, one NLM official suggests that only 15% to 20% of physicians have ever accessed the MEDLINE system,[70] a choice that

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[63] *See* Covell et al., *supra* note 17, at 597.

[64] *See* Greer, *supra* note 27, at 23; *see also* David M. Eddy, *Clinical Policies and the Quality of Clinical Practice*, 307 NEW ENG. J. MED. 343, 343 (1982) (describing the creation of medical practice standards through "comments at meetings and grand rounds to conversations in x-ray reading rooms and hospital cafeterias. . . . For these purposes, a policy maker is anyone who makes an unambiguous public recommendation about the management of a particular clinical problem.").

[65] Greer, *supra* note 27, at 23.

[66] *See, e.g.*, Haynes et al., *supra* note 16, at 638 ("[T]here is no guarantee that the expert will be a good judge of the quality of evidence or be organized enough to give you the exact citations you need."). However, as one researcher has said, "[computerized information] services are designed to complement rather than replace these other services. . . because the information required is more detailed or more current than that available from. . . a consultant." Scura & Davidoff, *supra* note 54, at 52; *see also* Weinberg et al., *supra* note 57, at 179 (discussing the positive role that opinion leaders can play in "expediting the translation of advances in biomedical research" into clinical practice); Wyatt, *supra* note 17, at 1368 (supporting the use of formal, centralized physician networks in assisting in the diffusion of medical information).

[67] *See* Haynes et al., *supra* note 16, at 638.

[68] *See* Covell et al., *supra* note 17, at 599.

[69] *See, e.g.*, Klein et al., *supra* note 14; Lindberg et al., *supra* note 1.

[70] *See* Silberner, *supra* note 15, at 89 (quoting Dr. Donald Lindberg, head of the NLM). This statistic includes searches performed by librarians for physicians. *See id.*

might result in deleterious effects on the quality of patient care in the United States.[71]

## III. HIGH-TECH MEETS THE LAW: THE MERGER OF DATABASES INTO THE REALM OF MEDICAL MALPRACTICE LITIGATION

### A. *The Medical Malpractice Cause of Action*

#### 1. *The Medical Standard of Care*

The history of medical malpractice and its relation to general negligence law is described by one legal scholar as "a maze of judicial mistakes one century in the making."[72] At the very least, medical malpractice actions are fundamentally distinct from an ordinary negligence action.[73] Generally, in order to recover damages for a defendant's negligent conduct, a plaintiff must plead and prove (1) that a duty was owed by the defendant to the plaintiff; (2) that the duty was breached by the defendant; (3) that breach of the duty was the cause of the plaintiff's injury; and (4) that the plaintiff in fact suffered harm.[74] The existence of a legal duty of care owed by the defendant to the plaintiff is judicially imposed by virtue of the relationship existing between the parties.[75]

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[71] For another quality of care issue regarding the legal implications of cost containment, see Barry R. Furrow, *Medical Malpractice and Cost Containment: Tightening the Screws*, 36 CASE W. RES. L. REV. 985 (1986); E. Haavi Morreim, *Cost Containment and the Standard of Medical Care*, 75 CAL. L. REV. 1719 (1987).

[72] Silver, *supra* note 20, at 1193. This quote describes the divergence of medical malpractice jurisprudence from general negligence law, a divergence that, according to Silver, was a result of "linguistic laziness" such that the two fields are now erroneously thought to rest upon "distinct doctrinal foundations." *Id.* at 1193–94.

[73] This distinction is based primarily on the law's deference to medical custom in determining the standard of care to which medical professionals must subscribe. *See generally* KEETON ET AL., *supra* note 23, § 32, at 189; Eleanor D. Kinney & Marilyn M. Wilder, *Medical Standard Setting in the Current Malpractice Environment: Problems*, 22 U.C. DAVIS L. REV. 421, 440 (1989); Allan H. McCoid, *The Care Required of Medical Practitioners*, 12 VAND. L. REV. 549, 605–06 (1959); Silver, *supra* note 20 (describing the development of the malpractice cause of action and its divergence from the general negligence standard).

[74] *See* KEETON ET AL., *supra* note 23, § 30, at 164–65; *see also* Knight v. United States, 498 F. Supp. 316 (E.D. Mich. 1980); Arneson v. City of Fargo, 303 N.W.2d 515 (N.D. 1981); Strother v. Hutchinson, 423 N.E.2d 467 (Ohio 1981) (per curiam); Lawyers Sur. Corp. v. Snell, 617 S.W.2d 750 (Tex. Civ. App. 1981); RESTATEMENT (SECOND) OF TORTS § 281 (1965).

[75] Thus, as explained in the *Restatement*: "[T]he interest which is invaded must be one which is protected . . . ." RESTATEMENT (SECOND) OF TORTS § 281 cmt. b (1965).

Where there is a duty owed by one party to another, the standard of care to which the defendant will be held is that of reasonable care under the circumstances, or that which an ordinarily prudent person would exercise in a similar situation.[76] The ultimate arbiter of whether the defendant acted reasonably is generally the trier of fact.[77] Thus, it is the role of the judge to determine the legal existence of a duty and the function of the jury to decide whether the duty was met by the defendant.

Whether its origin is found in contract or via the consensual, fiduciary relationship between the parties,[78] courts have universally held that a physician

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[76] This "reasonable person" standard has been adopted by the writers of the *Restatement*. *See id.* § 283. "Unless the actor is a child, the standard of conduct to which he must conform to avoid being negligent is that of a reasonable man under like circumstances." *Id.* In describing the reasonable man, the *Restatement* goes on to say:

> The words "reasonable man" denote a person exercising those qualities of attention, knowledge, intelligence, and judgment which society requires of its members for the protection of their own interests and the interests of others. It enables those who are to determine whether the actor's conduct is such as to subject him to liability for harm caused thereby, to express their judgment in terms of the conduct of a human being.

*Id.* at cmt. b. "Sometimes this person is called a reasonable man of ordinary prudence or an ordinarily prudent man, or a man of average prudence, or a man of reasonable sense exercising ordinary care. It is evident that such phrases are intended to mean very much the same thing." *Id.* at cmt. c.

[77] As explained by the *Restatement*:

> The chief advantage of [the reasonable man] standard is that it enables triers of fact who are to decide whether the actor's conduct is such as to subject him to liability for negligence, to look to a community standard rather than an individual one, and at the same time to express their judgment of what that standard is in terms of the conduct of a human being.

*Id.*

However, this is not to say that the jury should view the defendant's conduct in light of what they, the jury, would have done. As the *Restatement* explains:

> The reasonable man is a fictitious person who is never negligent, and whose conduct is always up to standard. He is not to be identified with any real person; and in particular he is not to be identified with the members of the jury, individually or collectively. It is therefore error to instruct the jury that the conduct of a reasonable man is to be determined by what they would themselves have done.

*Id.*

[78] There has been much made of whether the duty of care owed by a physician to a

owes a legal duty of care to his patient.[79] The legally formulated medical standard of care owed by a physician is described in the seminal case of *Pike v. Honsinger*:[80]

> Upon consenting to treat a patient, it becomes [the physician's] duty to use reasonable care and diligence in the exercise of his skill and the application of his learning to accomplish the purpose for which he was employed. He is under the further obligation to use his best judgment in exercising his skill and applying his knowledge. The law holds him liable for an injury to his patient resulting from want of the requisite knowledge and skill, or the omission to exercise reasonable care, or the failure to use his best judgment.[81]

The court in *Pike* and other courts throughout the nation[82] describe a multi-part standard of care to which physicians will be held. First, the physician must possess a reasonable degree of skill and learning. Second, she must apply this skill and learning in a reasonable manner. Finally, she must use her best judgment when faced with alternatives, but will not be liable for a mere error in judgment provided the physician does what she thinks is best after careful examination.

On its face, the standard looks like a logical modification of the general

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patient arises out of contract implied by law or is due to the nature of the fiduciary, doctor-patient relationship. *See, e.g.*, ANGELA RODDEY HOLDER, MEDICAL MALPRACTICE LAW 1–42 (2d ed. 1978) (arguing that the physician-patient relationship is generally considered to be a contractual one); 1 STEVEN E. PEGALIS & HARVEY F. WACHSMAN, AMERICAN LAW OF MEDICAL MALPRACTICE § 2:4 (1980). *But see* 61 AM. JUR. 2D *Physicians, Surgeons, Etc.* § 202 (1981) ("The duty of a physician or surgeon to bring skill and care to the amelioration of the condition of his patient does not arise from contract, but has its foundation in public considerations which are inseparable from the nature and exercise of his calling . . . ."). For the purposes of this Note, one need only understand that a duty does exist.

[79] *See* McCoid, *supra* note 73, at 553–75.

[80] 49 N.E. 760 (N.Y. 1898).

[81] *Id.* at 762.

[82] Another frequently cited recitation of the standard to which physicians are held is found in *Hall v. Hilbun*, 466 So. 2d 856 (Miss. 1985):

> [T]he physician's non-delegable duty of care is this: given the circumstances of each patient, each physician has a duty to use his or her knowledge and therewith treat through maximum reasonable medical recovery, each patient, with such reasonable diligence, skill, competence, and prudence as are practiced by minimally competent physicians in the same specialty or general field of practice throughout the United States . . . .

*Id.* at 873.

negligence standard that accommodates the unique knowledge, skill, and activities of a practicing physician. Yet, this standard functions quite differently in actual practice. First, as a member of a learned profession possesses skill and knowledge beyond that of ordinary individuals, doctors and other health care professionals are required to act in a manner consistent with these added capabilities.[83] This "professional standard of negligence" to which physicians and other professionals are held incorporates the added skill and knowledge inherent to professional credentials into the required duty of care. Thus, the "reasonable person" becomes the "reasonable physician."[84] However, in most jurisdictions, this reasonable physician is not expected to meet the standard of the "best trained," "most knowledgeable," or even a "reasonable" physician, but instead is held to employ such knowledge and ability as would the "minimally competent" physician, the "average" physician,[85] or "as is common or customary within the profession."[86]

Second, while general negligence law leaves the task of defining the standard of care and the determination of whether that standard is breached to the judge and jury respectively, in malpractice cases this task is delegated to the medical profession. Arguably, only another physician can instruct the court and jury as to the conduct of a minimally competent or average physician under the circumstances, and expert testimony is generally required to establish this

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[83] *See* King, *supra* note 25, at 1235; *see also* KEETON ET AL., *supra* note 23, § 32, at 185-86.

[84] As formulated by the *Restatement*: "If the actor has in fact more than the minimum of these qualities, he is required to exercise the superior qualities that he has in a manner reasonable under the circumstances. The standard becomes, in other words, that of a reasonable man with such superior attributes." RESTATEMENT (SECOND) OF TORTS § 289. cmt. m (1965).

[85] *See, e.g.*, Kobos v. Everts, 768 P.2d 534, 538 (Wyo. 1989) (stating that the malpractice standard of care is measured by the knowledge and ability of the average physician). *But see Hall*, 466 So. 2d at 871 (noting standard to be that of the "minimally competent physicians in the same specialty or general field of practice throughout the United States"). The distinction between "average" and "minimal" is an important one, because "minimal" suggests a less rigorous standard than holding a defendant to an average, or mid-point, of professional conduct. As one commentator suggests, such a semantic difference can be of vital significance in that a jury decision may differ depending on how negligence instructions are written. *See* 1 FURROW ET AL., *supra* note 22, § 6-2, at 362.

[86] This language, based on the so called "common calling" rule, was one of the early formulations of the professional malpractice standard. *See* Silver, *supra* note 20, at 1203-11. Furthermore, it is one of the traditional justifications offered in support of the current malpractice standard which defers to the medical community in establishing professional rules of conduct. *See* McCoid, *supra* note 73, at 607. This standard is often criticized, primarily due to the fact that other "common callings" are not afforded the same deference as is the medical profession. *See id.*

standard and whether the defendant physician complied with it.[87]

The trial process generally proceeds as follows. First, the plaintiff presents an expert witness at trial to establish her prima facie case, which must necessarily include evidence as to both the standard of care and a breach of that standard as testified to by the medical expert.[88] The defendant then, to avoid a directed verdict in the plaintiff's favor, must provide contrary medical expert testimony[89] asserting either that the standard of care is not as the plaintiff claims, or that the standard of care is as claimed but the defendant's conduct was in accord with said standard. The judge and jury have essentially no role in the process of evaluating the defendant physician's conduct directly by applying the objective "reasonable man" or "reasonable physician" standard, because that task is taken care of by the medical experts.[90] Rather, the judge and jury merely evaluate the persuasiveness of each side's competing display of experts in light of other evidence presented.

The rationale underlying this shift of responsibility for standard setting and conduct evaluation from the trier of fact to the medical community itself is several fold. First, it is said that because juries lack the technical expertise to

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[87] As stated in FED. R. EVID. 702: "If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise." FED. R. EVID. 702. The standard or customary practice is normally established through expert testimony. Further, in any jurisdiction, to withstand a directed verdict, the party seeking to admit testimony by way of an expert must (1) qualify their medical witnesses as experts; (2) satisfy the court that the expert testimony will assist the trier of fact; and (3) have the witnesses testify based upon the facts that support their opinions. *See* 1 FURROW ET AL., *supra* note 22, § 6-2(b), at 365. The expert should, ideally, practice in the same specialty as the defendant. *See id.* Note, however, that in some cases, plaintiffs can prove negligence using other methods. These methods include drug company warnings and instructions, learned treatises, defendants' own admissions, plaintiff's testimony, negligence per se, common knowledge exceptions, and the examination of defendants' experts. *See id.* at 367-70.

[88] *See* 1 FURROW ET AL., *supra* note 22, § 6-2(b), at 365 (explaining that expert testimony is needed to establish both the standard of care and breach). This sentiment is echoed in 7 WIGMORE, EVIDENCE § 2090(a) (3d ed. 1940) and McCoid, *supra* note 73, at 614 ("Courts in all jurisdictions appear to agree to the general principles that the plaintiff in a malpractice action bears the burden of persua[sion] . . . and that to meet this burden . . . must generally rely upon the testimony of medical experts."); *see also, e.g.*, Guerrero v. Smith, 864 S.W.2d 797 (Tex. App. 1993). However, despite this general requirement, courts are willing to permit the plaintiff to reach the jury without this evidence where the conduct of the defendant is so grossly negligent as to be within the comprehension of the layman. *See* McCoid, *supra* note 73, at 621. This doctrine is known as *res ipsa loquitur*. *See id.*

[89] *See* Kinney & Wilder, *supra* note 73, at 440.

[90] *See id.*

make independent judgments concerning the reasonableness of a given course of medical conduct, the medical community must make these decisions for the jury. These commentators contend that the medical community is the best judge of what is competent medical practice.[91] Second, it is argued that the medical community is granted a "preferred position" by the courts because of the nature of professional activity. Physicians are intensively trained and must devote long years of study to acquire the knowledge and skills necessary to make sound medical decisions. It is said that these decisions will be hampered where some medical "outsider" is allowed to judge the physician's conduct based on after-the-fact evaluations, causing the doctor to become hesitant to rely on his developed instincts.[92] Finally, it is sometimes argued that because a physician has impliedly represented that she will follow the standard methods of the medical community, it is to these standards that the physician should be held.[93] These justifications, however, have not escaped criticism.[94]

### 2. *The Role and Effect of Judicial Deference to Medical Custom*

The unique features of the malpractice action provide the medical profession with "the privilege, which is usually emphatically denied to other groups, of setting their own legal standards of conduct, merely by adopting their own practices."[95] The legal standard with which a nonnegligent physician must comply is that which is customary or commonplace among physicians. This standard is in direct contrast with that of ordinary negligence actions where adherence to customary practice is merely *evidence* of reasonableness.[96] In a malpractice action, adherence to custom, as developed by the medical

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[91] *See* McCoid, *supra* note 73, at 607. However, as explained by Pearson: "[J]uries are often required to consider difficult scientific matters which are beyond the knowledge of typical laypersons. Expert testimony may be required to educate the jury . . . [but this] does not in itself seem to be a sufficient justification for the medical custom rule." Pearson, *supra* note 23, at 535.

[92] *See* McCoid, *supra* note 73, at 608. *But see* Pearson, *supra* note 23, at 535–37 (criticizing McCoid's analysis).

[93] *See* KEETON ET AL., *supra* note 23, § 32, at 189.

[94] While most courts at least impliedly adhere to these justifications, at least one commentator questions the underlying assumptions on which they are based. Silver argues persuasively that because judgment is always the "hingepin" on which negligence turns, justifying a preferred status for physicians on this basis "is to ignore the fact that most human activity requires judgment—day to day and minute to minute." Silver, *supra* note 20, at 1216 n.67.

[95] KEETON ET AL., *supra* note 23, § 32, at 189 (citation omitted).

[96] *See* McCoid, *supra* note 73, at 606.

community and testified to by the medical expert,[97] is held by many courts as *dispositive* of reasonableness.[98]

The legal consequence of this formulation is that when a plaintiff fails to provide evidence concerning both customary practice and the defendant physician's failure to conform thereto, the defendant is entitled to a directed verdict.[99] Evidence of "unreasonableness" with regard to decisionmaking, procedure, or diagnosis, is legally insufficient without the plaintiff's establishment of these two prerequisites.[100] Plaintiffs have no opportunity to question the standard practice as itself being unreasonable, for if the defendant's procedure is in accordance with customary practice standards she satisfies her legal duty.

Each specific sub-duty owed to a patient by a physician is governed accordingly.[101] For example, a physician's duty to make accurate diagnoses, implement a course of treatment, and keep abreast of medical progress and developing techniques are all judged by her adherence to the ordinary standards of the medical practice.[102] If the medical community does not accept a

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[97] The inability of the medical community to agree on a specific set of practice standards is the cause of much of the confusion with regard to the malpractice standard of care, as experts can be found to disagree on many aspects of medical treatment and care. *See* Maxwell J. Mehlman, *Assuring the Quality of Medical Care: The Impact of Outcome Measurement and Practice Standards*, 18 L. MED. & HEALTH CARE 368, 376 (1990). Furthermore, a national practice standard does not exist for many procedures or tools, and substantial regional variations exist with regard to the use of many medical procedures with no clear difference in patient outcome. *See* 1 FURROW ET AL., *supra* note 22, § 6-2, at 362. For a discussion concerning the development of practice standards within the medical community, see generally Kinney & Wilder, *supra* note 73. It has been argued that established practice standards would eliminate much of the controversy and confusion surrounding medical malpractice, particularly with regard to the uncertainty of traditional deference to custom. *See, e.g.*, Gary W. Kuc, Comment, *Practice Parameters as a Shield Against Physician Liability*, 10 J. CONTEMP. HEALTH L. & POL'Y 439 (1994); Richard E. Leahy, Comment, *Rational Health Policy and the Legal Standard of Care: A Call for Judicial Deference to Medical Malpractice Guidelines*, 77 CAL. L. REV. 1483 (1989); Arnold J. Rosoff, *The Role of Clinical Practice Guidelines in Health Care Reform*, 5 HEALTH MATRIX 369 (1995).

[98] *See* McCoid, *supra* note 73, at 606.

[99] *See* Morris, *supra* note 23, at 1163.

[100] *See* 1 FURROW ET AL., *supra* note 22, § 6-2, at 361. As the authors explain, "Most jurisdictions give professional medical standards conclusive weight, so that the trier of fact is not allowed to reject the practice as improper." *Id.*

[101] For a partial list of the various individual duties within the physician's general duty of care, see generally 61 AM. JUR. 2D *Physicians, Surgeons, Etc.* § 247 (1981). Some of these include the duties to diagnose, to use evaluative procedures, to seek a consultation, and to take a proper medical history. *See id.*

[102] *See id.*

particular procedure or technique, the physician's failure to adopt it cannot be negligent if she chose the customary alternative. Of course, it is possible that adherence to the customary practice may be unreasonable in light of a published development or study indicating a contrary trend, as is evident by virtue of the MEDLINE case-studies mentioned above. Yet, if this trend has not been accepted by the medical community insofar as medical experts would call it "customary medical practice," the defendant physician will generally not be found negligent for her failure to adopt it.

The unique medical malpractice standard, unlike that afforded other professions,[103] is far more forgiving to the practicing physician than the ordinary negligence standard.[104] The physician is responsible for following, and keeping up with, customary practice, a standard which often demands only minimal competency. Many good physicians do assuredly evaluate and consider new developments and cutting-edge research studies when making a diagnosis or implementing a treatment plan. However, such diligence is not legally demanded, provided the new technique or cutting-edge procedure is not yet assimilated into the mainstream medical community. The danger this poses to the patients, a danger inherent to any process of industry standard setting, is frequently cited by critics as the primary reason for abandoning the practice and returning to the general standard of reasonableness where custom is only evidence of nonnegligence.[105]

### 3. Helling v. Carey *and Other Departures from Customary Practice*

The general rule in tort actions involving negligence was aptly stated by Justice Holmes in *Texas & Pacific Railway v. Behymer*:[106] "What usually is done may be evidence of what ought to be done, but what ought to be done is fixed by a standard of reasonable prudence, whether it usually is complied with or not."[107] In other words, custom is not dispositive of reasonableness in most negligence suits, but is accepted as merely evidence of reasonableness. Yet, as mentioned above, most U.S. jurisdictions make an exception in the case of

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[103] *See* KEETON ET AL., *supra* note 23, § 32, at 189; *see also* Silver, *supra* note 20, at 1216 n.67 ("[T]he judgment required of the conscientious physician is not one whit more subtle than that demanded of a conscientious lawyer, teacher, writer, engineer or probably, any other person pursuing a skilled calling . . . .").

[104] *See* McCoid, *supra* note 73, at 607 ("[T]he professional standard is assumed to offer the medical practitioner as much if not more protection than would a more general standard."); *see also* Morris, *supra* note 23, at 1165.

[105] *See, e.g.*, King, *supra* note 25, at 1216 n.10, 1255.

[106] 189 U.S. 468 (1903).

[107] *Id.* at 470.

medical malpractice, where adherence to custom *is* reasonable conduct.[108]

However, judicial deference to customary medical practice is not absolute and not all courts accept such adherence as the primary determinant of quality care.[109] The most extreme example of a court rejecting the customary practice standard is found in the case of *Helling v. Carey*.[110] In *Helling*, the plaintiff appealed from a judgment in favor of the defendant ophthalmologist, arguing that the trial court erred in failing to instruct the jury that adherence to the medical custom of not giving routine glaucoma pressure tests was not dispositive of reasonableness.[111] The plaintiff complained that this failure deprived her of arguing that the customary standards *themselves* were inadequate and thus unreasonable.[112] The trial court was correct insofar as such a charge was not mandated by the majority of U.S. jurisdictions.

The Washington Supreme Court reversed the trial court's judgment and found in favor of the plaintiff.[113] It would have been shocking enough to mainstream legal theory if the court had simply found the jury instructions faulty, and remanded for a new trial allowing the jury to pass on the appropriate standard of conduct given both the customary practice and plaintiff's evidence of the nature of the glaucoma test. However, the court went much further and held, as a matter of law, that the reasonable standard of care that should have been followed was to administer the inexpensive, harmless, and effective[114] glaucoma pressure test regardless of what was customary at the

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[108] *See* discussion *supra*, Part II.A.2.

[109] *See* Darling v. Charlestown Community Mem'l Hosp., 211 N.E.2d 253 (Ill. 1965) (finding custom not dispositive of reasonableness); Lundahl v. Rockford Mem'l Hosp. Assoc., 235 N.E.2d 671, 674 (Ill. App. Ct. 1968) (finding fact that usual or customary treatment would not preclude possibility of negligence or want of skill); Favalora v. Aetna Cas. & Sur. Co., 144 So. 2d 544 (La. Ct. App. 1962) (rejecting the customary practice relating to precautions to be taken to prevent patient from falling during an x-ray exam); Toth v. Community Hosp. at Glen Cove, 239 N.E.2d 368 (N.Y. 1968) (finding that where a physician fails to employ his expertise or best judgment, he is not absolved from liability because he followed customary practice); Burton v. Brooklyn Doctors Hosp., 452 N.Y.S.2d 875 (App. Div. 1982) (finding that although conventional medical wisdom was that increased oxygen was essential to the survival of premature infants, defendants were not relieved of liability); Helling v. Carey, 519 P.2d 981 (Wash. 1974) (holding that custom is never dispositive of reasonableness where custom itself is unreasonable); Nowatske v. Osterloh, 543 N.W.2d 265, 272 (Wis. 1996) (finding that the standard of care applicable to physicians cannot be established by the sum of the customs which those practitioners follow).

[110] 519 P.2d 981 (Wash. 1974).

[111] *See id.* at 982.

[112] *See id.*

[113] *See id.* at 984.

[114] While the Washington court found the benefits of tonometry (a measure of intraocular pressure which is elevated in patients with glaucoma) to far outweigh its cost,

time.[115] While the Washington legislature later codified the medical standard of care as that of the "average physician,"[116] apparently rejecting the *Helling* approach, the Washington Supreme Court later reaffirmed its holding in the 1979 case of *Gates v. Jenson*.[117]

Most courts that have since dealt with a *Helling* argument reject the Washington court's approach of establishing the standard of care as a matter of law.[118] However, there are courts that have held that custom is not dispositive of the standard of care, thus allowing the plaintiff to at least argue that the customary standard is itself negligent or unreasonable.[119] These cases generally involve either a readily understandable procedure or clear and abundant evidence that a customary practice was contraindicated or out of date.[120] Other courts refuse to consider custom conclusive evidence of reasonableness where a defendant is aware, or should be aware, of the dangers associated with the standard practice.[121] In such jurisdictions, failure by the plaintiff to prove that the defendant physician deviated from standard or customary practice will not alone provide the defendant physician with a directed verdict and plaintiff will be able to present evidence that customary practice is itself inconsistent with what a reasonable doctor should follow.[122] There is also evidence of a recent trend to abandon custom altogether, eliminating the "average" or "minimally competent" physician language from the health care provider's general legal

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commentators have been critical of this conclusion. *See* discussion *infra* Part III.B.1.

[115] *See Helling*, 519 P.2d at 983.

[116] After the *Helling* decision, the Washington state legislature enacted a statutory definition of the plaintiff's malpractice burden, codified as WASH. REV. CODE ANN. § 4.24.290 (West 1988). Apparently attempting to re-establish the pre-*Helling* malpractice standard, it enacted the following: "[A malpractice] plaintiff. . . . [must] prove . . . that the defendant or defendants failed to exercise that degree of skill, care, and learning possessed at that time by other persons in the same profession, and that as a proximate result of such failure the plaintiff suffered damage . . . ." *Id.* The Washington Supreme Court, however, later interpreted the statute as consistent with *Helling* in *Gates v. Jenson*, 595 P.2d 919 (Wash. 1979). The standard was finally refined, allowing for improvement on custom without relying on judicial fiat in *Harris v. Robert C. Groth, M.D., Inc.*, 663 P.2d 113 (Wash. 1983).

[117] 595 P.2d 919 (Wash. 1979).

[118] *See, e.g.*, Osborn v. Irwin Mem'l Blood Bank, 7 Cal. Rptr. 2d 101 (Ct. App. 1992); Barton v. Owen, 139 Cal. Rptr. 494 (Ct. App. 1977).

[119] *See* cases cited *supra* note 109.

[120] *See, e.g.*, Burton v. Brooklyn Doctors Hosp., 452 N.Y.S.2d 875, 879-80 (App. Div. 1982) (noting that a number of studies, including the defendant's own, indicated that increased oxygen was both unnecessary and dangerous).

[121] *See, e.g.*, Toth v. Community Hosp. at Glen Cove, 239 N.E.2d 368, 373 (N.Y. 1982) (finding negligence where it was well known, and defendant was aware of the fact, that oxygen placed infants at risk of certain complications).

[122] *See* 1 FURROW ET AL., *supra* note 22, § 6-2, at 361.

duty, and instead holding each defendant to the standard of a "reasonably prudent physician."[123] While experts are still necessary in such jurisdictions to describe what each side deems reasonable medical practice,[124] adherence to customary practice is not a safe harbor for the defendant physician. In these jurisdictions, the jury is able to evaluate whether the defendant's procedure was reasonable without the plaintiff being required to satisfy the prima facie requirement of proving a breach of the customary practice.

Another potential for plaintiffs opposing the customary practice standard utilizes the third prong of the general medical standard of care— the duty of a physician to exercise good medical judgment. It is said that a physician is required to employ her best judgment, but she is not liable for a mere error in judgment.[125] Thus, a doctor will not be second-guessed for doing what she believes is best for her patient, but she will be found negligent where choosing a poor alternative was the result of a sub-standard or negligent examination.[126] This standard assumes that there are multiple alternatives available to physicians, some which are better than others, and that the physician will not be held liable where there is reasonable doubt as to the proper course to follow.[127] However, where the physician chooses a contraindicated procedure, makes an incompetent decision, or incorrectly follows a course of treatment without fully evaluating the risks, the physician may be found to have acted unreasonably.[128]

Some courts utilize the "best judgment" wrinkle to find negligence notwithstanding a physician's adherence to customary practice where defendant's choice among the available alternatives was unreasonable in light of contrary data. For example, in the New York case of *Toth v. Community*

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[123] *See* KEETON ET AL., *supra* note 23, § 32, at 30 n.53 (Supp. 1988); *see also* Kalsbeck v. Westview Clinic, 375 N.W.2d 861 (Minn. Ct. App. 1985); Raines v. Lutz, 341 S.E.2d 194 (Va. 1986); Brown v. Dahl, 705 P.2d 781 (Wash. Ct. App. 1985). A minority of states have codified this language by statute. *See, e.g.*, VA. CODE ANN. § 8.01-581.20 (Michie 1992) ("reasonably prudent practitioner"); WASH. REV. CODE ANN. § 7.70.040(1) (West 1992) ("the reasonably prudent health care provider").

[124] *See* King, *supra* note 25, at 1241 (noting that even though an accepted practice formulation is a modification of the traditional approach, experts would still normally be required to offer their opinion as to the "reasonable expectations" of the medical community). A similar argument can be used here where the inquiry is whether the defendant's conduct is in accord with that of the reasonable physician.

[125] *See* 1 PEGALIS & WACHSMAN, *supra* note 78, § 2:9, at 69; *see also* Phillips v. Stillwell, 99 P.2d 104, 104 (Ariz. 1940) (noting that a physician is not liable for mere error in judgment, but does promise to use his best judgment).

[126] *See* 1 PEGALIS & WACHSMAN, *supra* note 78, § 2:9, at 70.

[127] *See id.* at 72.

[128] *See id.* at 70.

*Hospital*,[129] the court acknowledged that a physician's adherence to customary practice usually insulates her from liability.[130] However, the court explained, where "a physician fails to employ his expertise or best judgment, and that omission causes injury, he should not automatically be freed from liability because in fact he adhered to acceptable practice."[131] Thus, the court continued, where a physician is aware that a certain course of conduct is found to be dangerous, her failure to take adequate steps to ensure a patient's safety is not acceptable even though the general medical community does not customarily take such steps.[132] Other courts have followed this reasoning.[133]

## B. *Assimilation Possibilities and Legal Hurdles*

It is important to understand the nature of the MEDLINE database. It is not, by itself, a medical decisionmaking device. Thus, the legal concerns relative to the various medical expert systems currently being used by modern practitioners are not entirely applicable.[134] Furthermore, a MEDLINE search merely retrieves citations to published articles with accompanying abstract descriptions.[135] The studies, procedures, techniques, and data found within these published articles must be evaluated by the physician prior to its application. Therefore, in light of MEDLINE's capabilities, any judicial recognition of a computerized medical literature database is inextricably bound to the database search results themselves, their relevance, their reasonableness,

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[129] 239 N.E.2d 368 (N.Y. 1968).

[130] *See id.* at 372.

[131] *Id.* at 373.

[132] *See id.*

[133] *See, e.g.*, Thomas v. Wilfac, Inc., 828 P.2d 597, 602 (Wash. Ct. App. 1992) (finding doctor negligent for failing to call poison control where woman advised him she might be poisoned).

[134] A medical expert system ("MES") is a knowledge-based computer software application designed to assist doctors in the medical diagnostic process. An overview of the legal implications and concerns surrounding these devices is found in Frank D. Nguyen, Comment, *Regulation of Medical Expert Systems: A Necessary Evil?*, 34 SANTA CLARA L. REV. 1187 (1994). Much of the debate here concerns whether such systems should be evaluated under negligence principles, as a service, or strict liability, as a product. *See id.* at 1193–96. As computer databases are not decisionmaking devices, but merely information accessing devices, these concerns are not quite as relevant to the information provider. Nevertheless, there is a possibility that search software will be deemed a product, and that manufacturer liability could result should the program fail to function correctly due to no fault of the physician. *See* Arthur W. Hafner et al., *Computers in Medicine: Liability Issues for Physicians*, 6 INT'L J. CLINICAL MONITORING & COMPUTING 185, 191 (1989).

[135] *See* discussion *supra* Part II.A.

and their role in customary medical practice. It is unlikely that any court would find the failure to conduct a MEDLINE search substantive or procedural malpractice, absent proof that the failure to use the device was the cause of plaintiff's harm. This is because the relevance of a MEDLINE search goes only so far as the relevance and reliability of the information it retrieves.

With this in mind, the remainder of this Note will discuss the role that MEDLINE's immediate information access capability might play in the medical malpractice action and the legal and practical problems associated with such a possibility.

### 1. *The "Custom" Roadblock*

Allowing the medical community a preferred status in the realm of tort law has certain side-effects, both positive and negative. On the up-side, deference to medical custom frees the judicial system from making value judgments and legislative appraisals of medical practice, something the judicial system is arguably ill-equipped to handle.[136] Following the *Helling* intrusion into the practice of ophthalmology, for example, the medical community was critical of the courts for judicially mandating a certain test for glaucoma in light of the high rate of false positive results,[137] the lack of effective drug treatments for the disease,[138] and the skepticism regarding whether early treatment will even halt the progression of glaucoma at all.[139] Such arguments are persuasive, as is evidenced by the reluctance of most courts to follow the *Helling* mandate.

On the down-side, allowing the medical community the substantial insulation and benefit derived from setting their own standards of conduct has a decidedly negative effect, particularly with respect to information assimilation and the legal process. The MEDLINE advantage is that of information

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[136] *See* McCoid, *supra* note 73, at 607.

[137] *See* BARRY R. FURROW ET AL., HEALTH LAW: CASES, MATERIALS AND PROBLEMS 161 (2d ed. 1991). The number of patients who test abnormally high who actually have glaucoma is less than 1%. Thus, 99% of those who test positive must undergo further testing, and are subjected to considerable stress and worry over a disease they probably do not have. *See id.*

[138] "[T]he most commonly used drugs to treat the disease . . . are not always effective in lowering a patient's [intraocular pressure] or in stopping the progression of field defects." David M. Eddy et al., *The Value of Screening for Glaucoma with Tonometry*, 23 SURV. OPHTHALMOLOGY 194, 194 (1983).

[139] *See id.* As the study explains, "From the available evidence, it does not appear that earlier diagnosis makes a substantial difference in the patient's outcome. If all individuals over 40 years of age in a city of 1,000,000 were screened, the total cost of finding and treating about 484 people with chronic simple glaucoma would be on the order of $4,944,866 or about $13,000 per patient potentially benefited." *Id.*

liquidity. Published data is immediately accessible to physicians, provided they have the required software and hardware. This easy and efficient access to a wealth of medical information is at least helpful within the clinical setting.[140] However, the concept of judicial deference to customary practice does not require the medical community's utilization of up-to-the-minute information retrieval. The specific duty to "keep abreast," a subpart of the general medical duty, would be more accurately labeled a duty to keep abreast *of customary medical practice*.[141] MEDLINE is undoubtedly useful in eliminating the information barriers between urban and rural geographic areas, thus further eroding judicial use of the locality rule and facilitating a national standard of medicine.[142] However, the use of MEDLINE by physicians already familiar with customary practice, while arguably invaluable to patient care, is hampered by legal malpractice methodology. Where customary practice is the rule, a physician is not responsible for noncustomary procedures and techniques until they are assimilated into the standards of practice. Therefore, regardless of whether this information would assist the physician at the time of its initial

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[140] *See* discussion *supra* Part II.

[141] *See* Angela Roddey Holder, *Failure to "Keep Up" as Negligence*, 224 JAMA 1461, 1462 (1973). "Very few decisions have dealt with the sole question of whether or not a physician has been negligent simply because he did not use the latest methods of treatment. Those that have, however, apparently find a positive obligation to 'keep up' included in the applicable standard of care." *Id.*

[142] Until the middle of the century, most states established the standard of medical care with reference to the defendant physician's individual locality, thus allowing for supposed deficiencies in knowledge, information access, and technology. *See* Jon R. Waltz, *The Rise and Gradual Fall of the Locality Rule in Medical Malpractice Litigation*, 18 DEPAUL L. REV. 408 (1969); *see also* Silver, *supra* note 20, at 1226-36 (describing the history of the locality rule and the reasons for its demise). The rule was designed to protect rural practitioners by holding them to the standard of a "reasonably competent physician operating in the *same community*." *Id.* at 1226; *see also* McCurdy v. Hatfield, 183 P.2d 269, 271 (Cal. 1947). The result was that only an expert from *within* the defendant physician's community could testify as to local conditions. Silver outlines the two major reasons for the rule's demise: (1) a plaintiff was frequently unable to secure an expert because medical colleagues protected one another through the "conspiracy of silence"; (2) the rule created an anomaly whereby a physician who served as a community's only doctor could never be held to standards higher than her own. *See* Silver, *supra* note 20, at 1227. The courts eventually altered the standard to hold physicians liable for the level of practice in communities "similar" to their own, thus expanding the range from which plaintiffs could find experts. Most jurisdictions have now moved to a national standard of care. *See id.*; *see also* King v. Williams, 279 S.E.2d 618, 620 (S.C. 1981) ("'The "locality rule" has no present day vitality . . . .'" (quoting Pederson v. Dumouchel, 431 P.2d 973, 978 (Wash. 1967)). Some courts still maintain a resources-based caveat to the locality rule's elimination, where a physician will only be held accountable for the technology available to her. *See, e.g.*, Hall v. Hilbun, 466 So. 2d 856, 873 (Miss. 1985).

publication, only when such a technique or procedure becomes customary will the physician be found negligent for failing to employ it.

This situation is particularly troubling in light of the inherent difficulties associated with the process by which standard modes of medical practice are established and new procedures are integrated.[143] These difficulties are caused in part by ineffective information diffusion.[144] Although some clinical policies are produced by medical societies, specialty associations, and government "think-tanks" such as the Food and Drug Administration and the National Institutes of Health,[145] the overwhelming majority of medical standards are produced not by a singular, recognizable group but by thousands of physicians acting individually.[146] Over a period of years, hundreds of comments, articles, and reports converge to form a policy, which, if accepted by the majority of the medical community, becomes the "standard practice."[147] Oversimplification, lack of proper methodology, and overemphasis on empirical forms of knowledge can result in unjustified conclusions. These conclusions can snowball into a consensus about a certain clinical practice and, because even doctors tend to believe what they hear most frequently, if a certain recommendation is repeated often enough, it can quickly become standard practice.[148] This cycle is then perpetuated as doctors tend to look to informal information sources, such as other colleagues, for answers in lieu of looking outside their own medical circles for new studies, data, or procedures[149] that may call into question the standard methodology.[150] This cycle can impede the adoption of new, better policies and continue adherence to traditional ones. As one scholar explains, "[a] consensus may do no more than identify the point at which all the errors, oversimplifications, and biases converge; it does not necessarily identify what is best."[151]

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[143] *See* James A. Henderson & John A. Siliciano, *Universal Health Care and the Continued Reliance on Custom in Determining Medical Malpractice*, 79 CORNELL L. REV. 1382, 1391 (discussing the difficulties involved in custom formation, due in part to the plethora of caretaking technologies).

[144] Greer, *supra* note 27, at 23.

[145] *See* Kinney & Wilder, *supra* note 73, at 424–38 (discussing the two types of medical standards—clinical practice protocols and utilization review protocols).

[146] *See* Eddy, *supra* note 64, at 343; *see also* 1 FURROW ET AL., *supra* note 22 § 6-2(a), at 362 ("[M]ost clinical policies derive from a flow of reports in the literature, at meetings, and in peer discussions.").

[147] 1 FURROW ET AL., *supra* note 22, § 6-2(a), at 362.

[148] *See* Eddy, *supra* note 64, at 345.

[149] *See* Greer, *supra* note 27.

[150] *See* Eddy, *supra* note 64, at 347 (recommending that clinicians understand that a policy is not necessarily correct merely because it is "time-honored").

[151] *Id.* at 345.

The legal malpractice framework may actually serve to entrench poor standards into mainstream practice, as adherence to custom is the benchmark by which a physician's procedure is measured. A plaintiff's inability to present evidence of an unreasonable customary practice standard offers physicians little legal incentive to either evaluate the rationale behind a customary policy or think critically about proposing change.[152] Because a plaintiff's attempts to introduce evidence going to the unreasonableness of a customary practice will be met with a losing judgment, the job of monitoring customary practice is left entirely to the medical community. Although there are many conscientious physicians who conduct MEDLINE searches as part of routine medical procedure, the fact that MEDLINE use is still far from universal indicates that many physicians are not conducting extensive literature searches.[153] While some courts do offer limited protection to physicians who defy custom via the respectable minority[154] and best judgment rules,[155] the lone physician who dares to swim upstream with regard to clinical decisionmaking is likely to incur malpractice risk.[156] Thus, while the bridge to current information is only a few keystrokes away, the courts offer little incentive for physicians to incorporate MEDLINE-discovered innovations into their practices.

What does this mean for potential malpractice defendants in a jurisdiction that defers to customary practice? Unless customary practice is disputed, a physician that proves compliance with the customary procedures of the medical community will be entitled to a favorable judgment. This is not to say that the implications of MEDLINE are entirely irrelevant to physicians practicing in a customary practice jurisdiction. MEDLINE can be a major factor in penetrating

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[152] King argues that it is "specious to imagine that the health care market effectively allocates medical resources so as to maximize the quality of health care." King, *supra* note 25, at 1237. Therefore, it may be incumbent on the courts to initiate such maximization.

[153] *See* notes 70–71 and accompanying text. This conclusion is further supported by the difficulty most physicians experience in conducting a manual search without MEDLINE's assistance. *See* discussion *supra* Part II.B.

[154] Where there are different schools of medical thought, and alternative treatment methods, it has been held that the doctor is entitled to be judged according to the standards of the school followed. However, this school must be a recognized one, and must be the prevailing view in a "respectable minority" of the profession. *See* KEETON ET AL., *supra* note 23, § 32, at 187. Therefore, the rule offers protection to those physicians seeking to innovate or to those seeking to resist innovation.

[155] As discussed earlier, the best judgment rule provides the physician deference with regard to his medical judgment, provided it is made after careful examination. 1 PEGALIS & WACHSMAN, *supra* note 78, § 2:9, at 70.

[156] *See generally* Randall Bovbjerg, *The Medical Malpractice Standard of Care: HMOs and Customary Practice*, 1975 DUKE L.J. 1375, 1377; Clark C. Havighurst, *Altering the Applicable Standard of Care*, LAW & CONTEMP. PROBS., Spring 1986, at 265.

the knowledge barriers between rural and urban medical communities, in eliminating any residual use of the locality rule,[157] and in providing both physicians and plaintiffs a resource that ensures compliance with customary practice.[158] It would seem indefensible to cling to any exception to a nationalized standard of care in light of the availability of such an information resource. Furthermore, as MEDLINE use becomes increasingly widespread, the rate at which information assimilation occurs within the medical community will undoubtedly become more rapid. Therefore, it behooves any prudent physician, regardless of her location, to perform a literature search at some point during a patient encounter in order to keep abreast of changes in customary practice.

MEDLINE's greatest asset is its ability to give physicians the knowledge of 3600 journals when diagnosing and treating. However, as long as custom is entrenched as the mainstream malpractice standard, the legal role of MEDLINE may be practically limited to defensive use by physicians as a liability insulating device.

### 2. *The Alternatives*

#### a. *Departures from Custom and MEDLINE's Relevance*

As mentioned above, there are courts that refuse to consider custom as conclusive evidence of reasonableness, allowing the trier of fact to pass on the reasonableness of a defendant physician's conduct notwithstanding adherence to customary procedure.[159] Regardless of how the court accomplishes this, whether by elimination of the "minimally competent physician" comparison or by subordinating custom to a nonconclusive status, the main target of the inquiry is not whether custom was followed, but whether the defendant's conduct was in accordance with a reasonable physician.

As this inquiry opens the door to evidence other than that which shows a failure to follow customary practice, plaintiffs in these jurisdictions can argue that the defendant's conduct was unreasonable regardless of traditional medical standards. Recent nonmainstream developments located on MEDLINE, which

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[157] *See* discussion *supra* note 142.

[158] This is particularly relevant to what Furrow labels the "reluctant practitioner" who refuses to adopt the applicable customary standard of care in a particular case. Under the traditional rule, this deviation from the standard would be conclusive evidence of malpractice if proven by the plaintiff. *See* Barry R. Furrow, *The Causes of "Wrongful Life" Suits: Ruminations on the Diffusion of Medical Technologies*, 10 LAW MED. & HEALTH CARE 11, 13 (1982).

[159] *See* cases cited *supra* note 109.

would be legally irrelevant in jurisdictions giving medical custom conclusive weight, can be introduced as evidence that the defendant physician followed an unreasonable course of conduct. In this way, a MEDLINE search could be indirectly imposed as a legal necessity, by forcing physicians to conduct an effective literature search for fear that an inquisitive plaintiff's attorney will perform one. Should a plaintiff find reliable data that calls customary practice into question, the defendant physician may be deemed to have acted unreasonably for failure to discover or consider it. While no cases to date describe such a tactic, at least one court allowed a defendant physician to introduce evidence of a computer literature search,[160] and yet another alluded to the possibility that failure to conduct a literature search may be applicable to medical negligence.[161]

There are additional legal hurdles, however, that a plaintiff must navigate before a successful judgment is obtained—namely, whether the failure of the defendant physician to conduct a MEDLINE search is indeed unreasonable.[162] Again, it is not the use of MEDLINE itself that is the focus of the reasonableness inquiry, but the underlying results of the search that must be evaluated in determining whether defendant's omission was negligent. The question for the trier of fact is not whether the defendant's use or nonuse of the MEDLINE device was unreasonable given the circumstances but, instead, whether the defendant's failure to consider or follow the procedure, treatment, or study accessible through a MEDLINE search was unreasonable. Only then

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[160] *See* Warrick v. Giron, 290 N.W.2d 166, 170 (Minn. 1980). The court ruled that the empty results of the defendant's computer search was nonhearsay because it was not offered for the truth of any matters asserted in the literature, but merely as evidence that the plaintiff's expert was incorrect in stating that there was such literature available. *See id.* Therefore, the case has limited applicability to a situation where a plaintiff wishes to use the results of such a search as evidence that the defendant could have successfully relied upon an alternative procedure.

[161] *See* Harbeson v. Parke Davis, Inc., 746 F.2d 517, 521 (9th Cir. 1984). Note, however, that the court held that the physicians' failure to conduct a literature search was significant to the trial court finding on informed consent. The court expressly limited the holding to the informed consent situation, and reserved judgment on applicability to other theories of malpractice liability. *See id.*

[162] A plaintiff would also be forced to prove that the defendant's omission was the actual and proximate cause of the plaintiff's injuries. The causation element presents additional hurdles for the plaintiff, as proving harm from an omission is a difficult burden to bear. Assuming the omitted procedure or treatment is sufficiently reliable and proven, the plaintiff would likely be able to show that the omission of the MEDLINE search, and thus the failure to rely on such a finding, was, more likely than not, the cause of the harm. Conversely, where the results of a particular study are less than convincing, proving causation becomes more problematic for the plaintiff.

would one's failure to consult MEDLINE be negligent.

For example, if the MEDLINE search locates a single article detailing an innovative, but experimental, treatment for a certain illness, with questionable and unproven methodology, the physician's failure to follow this course of conduct would probably not be found negligent.[163] Likewise, her failure to conduct a MEDLINE search and to consider the study would be irrelevant, since any reliance on the underlying result of this search would not be poor medical practice regardless of its potential effectiveness. Had the defendant relied on this procedure, resulting in the plaintiff's harm, the plaintiff would likely have a successful malpractice suit,[164] not because the defendant deviated from custom, but because her reliance on a single questionable study was inconsistent with the practice of a reasonable physician. On the other hand, if a certain noncustomary procedure or treatment with well-founded methodology is found in multiple articles and is retrievable via a MEDLINE search, a defendant's failure to consider or follow this research could be found to be negligent. This is provided that the physician's nonreliance on the MEDLINE-generated alternative was unreasonable (i.e. not in accord with what a reasonable physician would have done), in comparison to customary procedure.[165]

Ultimately, the focus of this inquiry is whether disregarding information found in medical literature via a MEDLINE search is negligent relative to the physician's actual course of conduct. A plaintiff would be required to introduce this information with the assistance of medical experts,[166] who would then offer their opinion as to the defendant's omission in light of the foregone MEDLINE data.[167] The defendant physician, of course, would be free to offer her own data and expert testimony refuting the plaintiff's theory as to what, in fact, a

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[163] As Furrow explains, the innovative physician who wants to use a new diagnostic procedure or treatment plan which has not yet been incorporated into mainstream utilization may incur liability "if the procedure has received little support in the medical literature, and if it does not work properly." Furrow, *supra* note 158, at 14.

[164] *See id.*

[165] As Furrow explains, "An emerging consensus by researchers may not be adopted by practitioners for reasons related to their nature of practice. In such cases, courts have been willing on occasion to treat compliance with customary practice as only partial, not conclusive evidence of the standard of care, *where the plaintiff can present evidence as to the emerging consensus.*" *Id.* at 13 (emphasis added).

[166] *See* discussion *supra* note 88.

[167] *Cf.* King, *supra* note 25, at 1241. Here, King describes the inevitable necessity of having a medical expert offer her opinion, regardless of whether the court relies on custom as conclusive. *See id.* The difference, however, is that the opinion would not be to establish the custom and habit of the medical community, but would be an opinion as to the "reasonable expectations" of the profession's members. *See id.*

reasonable physician would have done under the circumstances. It would be left for the trier of fact to determine whether the defendant physician's failure to follow the plaintiff's proposed alternative was unreasonable in light of this competing testimony and the various costs and benefits associated with both the customary and noncustomary procedures.[168]

However, this proposed legal scheme is problematic. First, while there is evidence that courts are beginning to relax in their deference to customary medical practice, the movement is far from widespread. Moreover, many of these courts tend to limit their fiat to *Helling*-like situations, where the medical community is clearly lagging behind an established, cost-effective, and scientifically reliable trend,[169] or where the defendant is clearly aware of the dangers of following customary practice.[170] Thus, as a conduit through which new, medically sound procedures and developments can be more readily assimilated into clinical practice, even MEDLINE may not be effective where courts require such obvious evidence of the medical community's neglect.

Second, while the evidentiary standards for admitting scientific evidence were relaxed by the United States Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*,[171] the case is not a panacea. In *Daubert*, the Supreme Court abandoned the so-called "*Frye* test,"[172] which required that scientific tests or theories be generally accepted in their particular field as a prerequisite to admissibility,[173] and adopted a more flexible approach.[174] The Court recited a nonexhaustive list of factors that judges could consider in determining whether to admit scientific evidence, including (1) whether the theory or technique can be (and has been) tested; (2) whether the theory or technique has been subject to peer review; (3) the known or potential rate of error; (4) whether standards controlling the technique's operation exist and were maintained; and (5) whether the theory or technique is generally accepted.[175] Thus, while "general acceptance" by the scientific community is no longer the *sole* factor for admissibility vis-à-vis *Frye*, it remains *a* factor for the trial court to consider when making its evidentiary ruling.

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[168] *See id.* at 1241–42.

[169] *See* cases cited *supra* note 109.

[170] *See* cases cited *supra* notes 120–21.

[171] 509 U.S. 579 (1993). As a malpractice action ordinarily arises under state law, an analysis of the federal rules of evidence may seem inappropriate. However, because the majority of state evidentiary codes track the federal rules verbatim, federal case law construing the federal rules is normally deemed persuasive in state court. *See* CHRISTOPHER B. MUELLER & LAIRD C. KIRKPATRICK, EVIDENCE § 1.2, at 4 (1995).

[172] *See* Frye v. United States, 293 F. 1013 (D.C. Cir. 1923).

[173] *See id.* at 1014.

[174] *See Daubert*, 509 U.S. at 588–97.

[175] *Id.* at 593–94.

What does *Daubert* portend for malpractice plaintiffs seeking to introduce evidence of a novel medical technique or study uncovered by a MEDLINE search? Ordinarily, the very reason a plaintiff resorts to MEDLINE is the failure of her doctor to adopt a newly developed procedure or technique. However, literature uncovered by a database search will often *not* be generally accepted by the medical community. Certainly, admissibility will be more likely under *Daubert*'s flexible approach than under *Frye*, particularly where the technique survives peer scrutiny. Nevertheless, general acceptance remains a part of the admissibility gateway, and courts may attach inordinate weight to *Daubert*'s general acceptance prong[176] leaving plaintiffs with problems similar to those encountered in jurisdictions deferring to medical custom.

Most importantly, there is still a question as to whether judges or juries are even capable of determining reasonable conduct, particularly when the medical community itself rarely agrees on standard policy.[177] Both courts and scholars defend customary deference on the ground that medical judgment cannot, and should not, be questioned by the layperson because it is too complex and the human body too temperamental.[178] Thus, any post-judgment evaluation should be left to the physician's peers. Others suggest that the medical practice is not susceptible to evaluation through ordinary principles of common sense and reasonableness.[179]

Regardless of these difficulties, physicians would be well advised to utilize MEDLINE's capabilities, particularly in jurisdictions that have either modified or eliminated the role of medical custom in determinations of negligence. As courts continue to reconsider their malpractice formulations, and continue to allow plaintiffs to present evidence other than that evidencing deviation from customary practice, physicians will become increasingly accountable for on-line information.

### b. *The Reasonableness Inquiry: Practical Problems and Technical Difficulties with MEDLINE Searching*

While the capabilities of on-line medical information are seemingly infinite, there are practical limitations that temper MEDLINE's clinical effectiveness.

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176 *See* MUELLER & KIRKPATRICK, *supra* note 171 § 7.8, at 749–50; *see also* 2 MICHAEL H. GRAHAM, HANDBOOK OF FEDERAL EVIDENCE § 702.5, at 83–89 (4th ed. 1996) (explaining that some state courts have less than enthusiastically received the *Daubert* approach and have favored a test more in tune with *Frye*).

177 *See* 1 FURROW ET AL., *supra* note 22, § 6-2(a), at 362; *see also* Mehlman, *supra* note 97, at 376.

178 *See* McCoid, *supra* note 73, at 607–08.

179 *See, e.g.*, Pedigo v. Roseberry, 102 S.W.2d 600, 607 (Mo. 1932).

Moreover, these flaws are fundamental to any discussion of legal incorporation. Although physicians are expected to make themselves aware of the existence of information that is relevant to their patient's condition and that is reasonably available,[180] whether it is reasonable to hold physicians accountable for all information theoretically accessible by virtue of a MEDLINE search is necessarily limited by the information's *realistic* availability. If a physician cannot realistically access this wealth of information, it is unjust to hold her accountable for following, or even considering, it.

### i. *Everything Isn't Everything: Incompleteness and Inefficiency*

While medical databases such as MEDLINE do indeed contain voluminous amounts of medical literature, they are far from complete, comprehensive collections. Only one in six of the world's biomedical journals are included in the MEDLINE system.[181] This problem can be alleviated, at least in part, by subscribing to databases in addition to the MEDLINE system, such as the NLM's AIDSLINE, CHEMLINE, TOXLINE, and DIRLINE, all of which are accessible via the Grateful Med software package.[182]

An additional problem is the inevitable lag time between the date an article is published and its inclusion within the database. This phenomenon occurs because of delays both in the arrival of journals at the NLM and in data entry and indexing.[183] One clinician manually located two relevant publications, one from mid-September and another from early October, that were not posted on the MEDLINE system as of mid-November.[184] Still, the MEDLINE route does provide the largest number of relevant and timely articles per unit of search time invested.[185]

Another barrier to effective MEDLINE searching concerns the system of MeSHs, which allows searchers to retrieve documents by inputting certain pre-indexed terms. These MeSH keywords are determined by a trained indexer upon reading the particular full-text article. However, since indexers have minimal clinical training, and many of the terms physicians use have no corresponding MeSH equivalent, terms commonly utilized in medical practice

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[180] *See* Harbeson v. Parke Davis, Inc., 746 F.2d 517, 525 (9th Cir. 1984) (finding that physician is responsible for that which is material and reasonably available with regard to informed consent).

[181] *See* Wyatt, *supra* note 17, at 1371.

[182] *See* NLM, GOOD MEDICINE, *supra* note 30.

[183] *See* Wyatt, *supra* note 17, at 1368.

[184] *See* Haynes et al., *supra* note 16, at 639.

[185] *See id.*

are often not adequately searchable.[186] For example, the terms "intrauterine hypoxia" and "birth asphyxia," while common labels for clinicians, are not indexed within the MEDLINE system.[187] Thus, when a physician is unfamiliar with the MeSH vocabulary, a MEDLINE search using terms common to the physician may result in an incomplete or even fruitless search with the physician being oblivious to the deficiency.

Other users find the headings themselves neither complete nor sufficiently cross-referenced. In a recent trial, three clinicians, after performing an extensive six-year manual literature search on the subject of perinatal asphyxia, attempted to evaluate the effectiveness of the MeSH indexing system. Diligently following the MeSH system, these physicians substituted commonly used clinical language with their appropriate MeSH substitutes. Their resulting MEDLINE search neglected to locate fifteen percent of the relevant hand-searched articles.[188] Therefore, even when a physician resorts to the MEDLINE-provided list of MeSH terms, it is possible that hand-searched articles will be overlooked by the computer, regardless of how aggressive and skilled the user is.

The legal relevance is clear. It is entirely possible that a physician, employing the standard MEDLINE search techniques can, through no fault of her own, fail to discover a number of relevant clinical studies—studies which may have had an impact on her patient's treatment. If a plaintiff's attorney, via her own diligence or by using an experienced research librarian, manages to stumble upon such studies, it would seem unjust and perhaps unreasonable to find the physician negligent for her omission, regardless of the article's medical efficacy.

### ii. *Doctors Are Not Librarians: Search Difficulties*

Computer databases present yet another practical barrier to clinicians—the procedural difficulty in accessing information. Studies show that even when physicians are adequately trained in MEDLINE searching, their searches are effective less than fifty percent of the time,[189] far less effective than most research librarians and far too ineffective to allow a finding of negligent omission. Physician searches generally retrieve less relevant data, and more irrelevant data than an experienced database user because of the physician's

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[186] *See* Wyatt, *supra* note 17, at 1371.

[187] *See* Maria Jesus Largaespada et al., *How Accurate Are Bibliographic Databases?*, 1988 THE LANCET 538, 538 (Letter to the Editor).

[188] *See id.*

[189] *See* Haynes et al., *Online Access to MEDLINE in Clinical Settings: A Study of Use and Usefulness*, 112 ANNALS OF INTERNAL MED. 78, 79-83 (1990).

failure to use advanced searching techniques.[190] This results in increased on-line time and higher medical costs.[191] While there is evidence that these results can be improved with extensive training,[192] even those physicians who are so trained often do not consistently find the same information as compared to other similarly trained searchers.[193]

Since data retrieval is an art in and of itself, holding physicians accountable for information obtained as part of a perfectly conducted MEDLINE search would essentially result in judging physicians on their ability to conduct computer searches, not on practicing medicine. One could argue, of course, that such searches are now a part of any competent medical practice, and that computer searching is now a skill that any medical professional must possess before considering herself adequately and reasonably trained.[194]

### iii. *Financial Barriers*

While many physicians see monetary expense as a significant barrier to MEDLINE access,[195] it is far less an obstacle to incorporating a database search into a medical practice than one might think. The cost of personal computers has dropped dramatically in recent years, as has the cost of requisite peripheral hardware and software.[196] The NLM provides access to Grateful Med search software for $29.95 and an average on-line search ranges from $1.25 to $5.00, depending on the amount of information viewed, downloaded, or printed.[197] This cost will obviously decrease in relation to the user's searching speed and skill. The relatively low cost of the service is cited by physicians as an important factor in choosing to access the MEDLINE system.[198] Searching via MEDLINE undoubtedly is far more cost-effective than the standard manual literature search.

However, while cost is not a major issue to the average urban physician, it

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[190] *See id.*; *see also* McKibbon et al., *supra* note 4, at 591.

[191] *See* McKibbon et al., *supra* note 4, at 591 (noting that physician's search costs were almost double that of a librarian searcher).

[192] *See, e.g.*, Haynes et al., *supra* note 189, at 83 (noting that studies indicate that clinical end-users can be competent searchers with practice); McKibbon et al., *supra* note 4, at 591 (finding that recall performance of experienced end-users approximated that of librarians).

[193] *See* McKibbon et al., *supra* note 4, at 586–90.

[194] *See* Hafner et al., *supra* note 134, at 188.

[195] *See* Dalrymple, *supra* note 45, at 231.

[196] *See generally* Mark Potts, *High-Tech Price Cuts: Putting the Byte on a Computer*, WASH. POST, Mar. 23, 1992 (Washington Business), at 15.

[197] *See* NLM, GOOD MEDICINE, *supra* note 30.

[198] *See* Lindberg et al., *supra* note 1, at 3128.

has greater relevance to rural medical practices where advanced medical technology is often unaffordable and, subsequently, unavailable. With the virtual elimination of the locality rule[199] from modern U.S. malpractice jurisprudence, physicians in even the most rural of medical settings are held accountable for information existing outside their immediate practice vicinity. Such accountability will only be enhanced by MEDLINE; the information revolution is already cited as a significant force behind the movement of courts away from the traditional locality exception.[200]

Some courts adopt a resources-based caveat to the locality rule's elimination. In *Hall v. Hilbun*,[201] the Supreme Court of Mississippi proposed an exception to the much maligned locality rule by holding physicians to a standard of care commensurate not only with the minimally competent physician in the same practice in the United States, but with a physician who has the same general facilities, services, equipment, and options available to her.[202] While such an exception might seem to include computerized database access, the cost of such an adequate set-up is relatively low, particularly in relation to the cost of defending a malpractice claim[203] for failure to be cognizant of a customary procedure. Furthermore, in light of the movement toward a nationalized standard of medical care, MEDLINE is the ideal way to ensure that rural communities at least have access to the latest medical information, even if technological limitations do not allow the performance of these innovations in the rural medical office.[204]

### iv. *Information Overload, for What?*

It is said that physicians are exposed to "information overload" immediately upon entering medical school.[205] A study performed in England indicated that medical students were required to learn 47,900 various facts and

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199 *See* discussion *supra* note 142.

200 *See, e.g.*, Hall v. Hilbun, 466 So. 2d 856, 870 (Miss. 1985) ("All the while [physicians] have ready access to professional and scientific journals and seminars for continuing medical education from across the country.").

201 466 So. 2d 856 (Miss. 1985).

202 *See id.* at 872.

203 During 1984 (the latest year for comprehensive statistics), the American insurance industry settled approximately 73,500 malpractice claims against 103,300 health care providers. The average payment was $80,741, and the largest single payment was $2.5 million, with the year's total at $2.6 billion. *See* U.S. GEN. ACCOUNTING OFFICE, MEDICAL MALPRACTICE: CHARACTERISTICS OF CLAIMS CLOSED IN 1984 (1987).

204 *See* 61 AM. JUR. 2D *Physicians, Surgeons, Etc.* § 210, at 342-43 (1981).

205 *See* J. Anderson & A. Graham, *A Problem in Medical Education: Is There an Information Overload?*, 14 MED. EDUC. 4 (1980).

29,900 different medical concepts, indexed in medical textbooks by 19,800 individual terms, or stated another way, an average of twenty-four facts or concepts during every hour of the first two years of medical study.[206] The expansive volume of medical literature is a major reason for the medical community's failure to both arrive at concise practice guidelines[207] and keep up with medical advances.[208] On-line medical literature databases like MEDLINE only add to this mass of information and may further cloud the physician's judgment as to what is reasonable medical practice.

Furthermore, while questions are often generated by the health care professional,[209] medical literature is often not an effective source for the answers. Studies suggest that a significant factor in a physician's failure to resort to medical literature is the inapplicability of such literature to clinical problems.[210] In order for the medical literature to be useful to clinicians, it must answer questions that arise in patient care, measure clinically relevant variables, and use research designs most likely to yield valid medical conclusions.[211]

It is also important to note that merely reading medical literature cannot alone provide the reader with actual working knowledge of the procedures or techniques described therein.[212] Such knowledge is only gained through personal evaluation and practice, a process which in turn generates the confidence required to actually employ this knowledge in the clinical setting.[213] Information-based liability may inappropriately and unjustly equate awareness of medical information with knowledge of that information.[214] Again, as MEDLINE is merely a retrieval device, it can do nothing to enhance the

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206 *See id.* at 6–7.

207 *See* Wyatt, *supra* note 17, at 1368.

208 Another reason is the rush of technology. *See, e.g.*, Barak Gaster, *The Learning Curve*, 270 JAMA 1280 (1993) (telling story of older surgeon's struggles in keeping up with innovative surgery techniques).

209 *See generally* Covell et al., *supra* note 17.

210 *See* Greer, *supra* note 27, at 23 (discussing the failure of the scientific literature to speak effectively to the clinician).

211 *See id.*

212 *See* Kibble-Smith & Hafner, *supra* note 22, at 91 (quoting Thomas J. Harlan, Jr., *A Statewide Standard of Care in Medical Malpractice Cases—We're Shoveling Smoke*, 18 U. RICH. L. REV. 361, 372 (1984)).

213 *See* Greer, *supra* note 27, at 23.

214 *See* Kibble-Smith & Hafner, *supra* note 22, at 91–92. This burden, however, may be justified as an acceptable cost of improving the medical community's ability to process and manage information, which may lead to better patient care. *See id.* ("[T]he increased awareness burden may be an acceptable cost of improving patient standards through better information processing.").

practical significance or inherent limitations characteristic of published medical literature.

## IV. CONCLUSION

Computer information technology is progressing at an unprecedented rate, as is the volume of innovative medical literature. Nevertheless, it seems that mandating the use of, or even admitting evidence gleaned from, a computerized MEDLINE search is, as yet, unworkable, particularly in light of the database's inherent limitations. Furthermore, absent a strong legal movement toward the adoption of a general negligence approach to the traditional malpractice standard, or a case of legally mandated standard-setting vis-à-vis *Helling*, the national scope of any indirect incorporation of such a requirement into the standard of care required by reasonable physicians will be limited.

However, that is not to say that the discussion of such a possibility is moot. There is adequate case law to support the proposition that courts are willing to adopt a *Helling* approach when omission of a service becomes indefensible. Moreover, there is a growing number of jurisdictions that are abandoning custom in favor of the "reasonable physician" approach. MEDLINE may also further solidify the movement toward nationalizing medical standards and implementing practice guidelines by offering a source through which all physicians can quickly obtain information regarding relevant nationally adopted procedures.

Ultimately, however, the onus of using MEDLINE will fall on the custom-makers—the medical community. Prudent physicians should use MEDLINE preventatively to avoid falling behind custom. As MEDLINE use and effectiveness continues to increase, so will the assimilation of new medical procedures, treatments, and techniques into the mainstream medical community, even absent a firm judicial mandate. Furthermore, custom does not always equate with "good medical practice." Therefore, physicians have an ethical, if not legal, duty to at least consider recent medical literature before blindly adopting a traditional course. Regardless of MEDLINE's functional limitations, incorporating a MEDLINE search into one's diagnosis and treatment protocol is not only legally preventative, but also is simply good medicine.